SPOUT RUN ARCH BRIDGE
George Washington Memorial Parkway, eastbound, spanning Spout Run
Arlington Vicinity
Arlington County
Virginia

HAER No. VA-79

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

PHOTOGRAPHS

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

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I. INTRODUCTION

Location: George Washington Memorial Parkway milepost 7.62; 7.8 miles from Interstate 495; Carries eastbound GWMP over Spout Run Parkway and Spout Run, a tributary of the Potomac River in Arlington County, Virginia.

FHwA Structure No.: 3300-010P.

Date of Construction: 1958-1959.

Type: Reinforced concrete rib arch bridge.

Designer: Bureau of Public Roads and National Capital Parks, National Park Service.
R.H.Wood-- Engineering Designer, BPR.
H.J. Spelman-- Regional Engineer, BPR Region 15.
William Haussmann, Chief of Architectural Branch, NPS.

Contractor: Capital Engineering Co., Washington D.C.

Present Owner: National Capital Region, National Park Service.

Present Use: Carries eastbound road of GWMP over westbound Spout Run Connection and Spout Run.

Significance: The best example of the use of pure structural form for aesthetic expression on the parkway and possibly in the district.

Project Information: Documentation of the George Washington Memorial Parkway and Clara Barton Parkway was undertaken as a multi-year project by the Historic American Buildings Survey and the Historic American Engineering Record (HABS/HAER), a combined division of the National Park Service, Robert Kapsch, Chief. The project was sponsored by the Park Roads Program of the National Park Service, John Gingles, Deputy Chief, Engineering and Safety Services Division. The Project Supervisor was Sara Amy Leach, HABS Historian. Bridge reports were prepared by Elizabeth M. Nolin (1988); Michael P. Kucher (University of Delaware, 1993); and Jennifer P. Wentzien (University of Washington, 1994).

HABS Report No. VA-69 prepared by Timothy Davis (University of Texas) provides an overview history of the entire parkway project. Jack E. Boucher and Jet Lowe produced the large-format photographs. The Washington-based summer 1994 documentation team was headed by landscape architect Tim Mackey (Harvard University, Graduate School of Design).

II. HISTORY

The High Level Spout Run Bridge completed in 1959 is one of several bridges designed in and built in the 1950s to carry the George Washington Memorial Parkway (GWMP) to the CIA Building at Langley. Region 15 of the Bureau of Public Roads (BPR) performed the survey work, prepared the plans, and oversaw the construction. The initials of William Haussmann of the NPS architectural staff appears on the drawings. Haussmann's name appears on GWMP bridge drawings from the 1940s through the 1960s. The Commission of Fine Arts approved the design in 1957.

The bridge rises over 60' above the Spout Run and the Spout Run Parkway in wooded hilly area near the mouth of Spout Run. The dramatic structure is difficult to see during summer months when vegetation is fullest. The best views of the bridge, and the framed view of the Potomac beyond, occur as one travels eastbound on the roadway below. Because traffic on what is now known as the Spout Run Parkway is westbound only, it is rare that the High Level Spout Run Bridge is enjoyed by motorists.

The structure has been called "undisputedly one of the Capital's most dramatic constructions."[1] It is the first bridge to break with "rustic" aesthetic used by Gilmore Clarke on earlier GWMP bridges.
A rejected proposal dated February 1956 is a conventional three span plate girder bridge on reinforced concrete "T" shaped piers and abutments. As built the bridge boasts the one of the most distinctive designs on the GWMP. The slender arch, only 4'10" thick at its center, is striking in appearance. The bridge is the most Modern design on the GWMP, in terms of both its architectural qualities and its structural design. The only element in keeping with the earlier "rustic" style is the stone facing on the wing walls. The bridge is reminiscent of designs by the Swiss engineer Robert Maillart as well as the Ross Creek Bridge in Rock Creek Park built in 1907.

Description

The High Level Spout Run Bridge is a reinforced concrete rib arch bridge supported on reinforced concrete abutments and bents. The bridge deck is comprised of eight spans symmetrical about a center span of 84'-6" resting between the crowns of the arch ribs. The end spans are 23'-3" and the additional six spans each measures 24'-6". The arch spans 222' and the deck spans a total length of 325' including wing walls. The deck slab is on a 15' curve. The tapered arch ribs have a rise of 36' above the spring line. The bridge has a 24' wide roadway with a 2' low curbs between sidewalk and roadway. There are 5' sidewalks on both sides. The total width is 34'.

The contractor used blasting to excavate for the foundations, which are on solid rock. Foundations for all supports are spread footings. Footings for the wing walls are of the counterfort type (stepped). Two reinforced concrete box beam arch ribs rise from their footings and form a parabolic curve. The ribs in turn carry six two-column bents. These bents, two additional bents supported at grade, the and the two abutments support the eight spans of the bridge deck. A center portion of the deck rests directly on the arched ribs. Transverse girders spanning between the two arches create a diaphragm.
Capital Engineering of Washington D.C. was the prime contractor. Frank B. Cartwright of New York

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[1]Myer, Bridges and the City of Washington, p. 83.

designed and fabricated the wooden arch truss which served as falsework for the concrete forms for the arch ribs and column bents. Virginia Concrete Co. of Arlington supplied the concrete including Protex, an air entraining agent, which was added at two ounces per cubic yard. Plywood was used for all form surfaces. Bethlehem Steel Company supplied the reinforcing steel. The ribs were poured using two construction joints. First the base was poured, then wall, then the top section. During cold weather straw was placed over concrete and covered with a tarpaulin to provide insulation. Kon-x bearing pads were used at the four expansion joints were supplied by Keasbey and Mattison Co. of Anbler, Pennsylvania. The wing walls are battered and have a stone facing. Granite facing was supplied by the Georgia Granite Company in Elberton, Georgia. The Piquado Stone Company of Washington, D.C. was the subcontractor for stone masonry work on the wing walls. The Michael Flynn Manufacturing Company of Philadelphia supplied the aluminum guard railings through the Montague-Betts Company of Lynchburg, Virginia. Drawings call out outlets for future light standards.

Despite its large span, steeply sloped site and curved ribs, the final construction report claims there were no difficulties completing the project. The contractor completed the bridge in 440 days at a total construction cost of $280,000 with an additional $20,000 in engineering costs.[2]

Alterations

Sidewalks have been reduced to a width of 2.3' to widen the roadway. See also "Final Construction Report: Projects 1A35, 1A47, 1A62."

[2]Technical information is from Bureau of Public Roads "Final Construction Report, Project 1A7," and drawings on file at the National Capital Region Park Headquarters.

III. SOURCES

Myer, Donald B. Bridges and the City of Washington. U.S. Commission of Fine Arts: Washington D.C., 1974.

U.S. Department of Commerce, Bureau of Public Roads. Plans for Proposed Project 1A7, 1A35, 1A47, and 1A62. Microfiche reductions of original construction drawings on file at the Bridge Inspection office of the Eastern Federal Lands Highway Division, Federal Highway Administration, Sterling Virginia.

U.S. Department of Commerce, Bureau of Public Roads, Division of Eastern National Forests and Parks, "Final Construction Report, George Washington Memorial Parkway, Project 1A7: High Bridge over Spout Run, Arlington County, Virginia," Submitted by D. Hugh Brown for the Division Engineer, 10/14/59. Records Office of the Eastern Federal Lands Highway Division, Federal Highway Administration, Sterling Virginia, remote storage facility. Current bridge inspection reports are available from the same office.

U.S. Department of the Interior, Historic American Buildings Survey (HABS), No. VA-69, "George Washington Memorial Parkway," 1994. Prints and Photographs Division, Library of Congress, Washington D.C.